

## PATENT COOPERATION TREATY

## PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT  
(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference 13995/WO/01	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/IL 03/01092	International filing date (day/month/year) 19.12.2003	Priority date (day/month/year) 19.12.2002
International Patent Classification (IPC) or both national classification and IPC G01B21/00		
Applicant RAFAEL-ARMAMENT DEVELOPMENT AUTHORITY LTD.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.
- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand  12.07.2004	Date of completion of this report  21.09.2004
Name and mailing address of the International preliminary examining authority:   European Patent Office - Gitschiner Str. 103 D-10958 Berlin Tel. +49 30 25901 - 0 Fax: +49 30 25901 - 840	Authorized Officer  Vorropoulos, G  Telephone No. +49 30 25901-614 

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/IL 03/01092**

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-29 as originally filed

**Claims, Numbers**

1-40 as originally filed

**Drawings, Sheets**

1/7-7/7 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY  
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International application No. **PCT/IL 03/01092**

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1-40
	No: Claims	
Inventive step (IS)	Yes: Claims	1-40
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-40
	No: Claims	

2. Citations and explanations

**see separate sheet**

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1.1 Reference is made to the following document:

D1:US-A-4 805 108.

1.2 The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and discloses (the references in parentheses applying to this document):

A method for processing and analyzing digital terrain data, comprising:

- a) providing Digital Terrain Elevation Data (DTED) (column 2, lines 43-45);
- b) defining an approach azimuth (Fig.1; column 2, lines 39-43);
- c) defining directional fans (Fig.1:f1,f2..; column 2, line 48-column 3, line 8) by determining a fan opening angle, a fan azimuth, and a maximal range for terrain analysis(Fig.1);
- d) interrogating said data (Column 2, line 56-column 3, line 8) by one or more queries to obtain terrain information for given approach conditions.

The subject-matter of claim 1 therefore differs from the method disclosed in D1 in that:

At least one directional fan data set is constructed , from at least one source point within the DTED, that contains the line of sight information between said source point and DTED points located within said directional fan .

1.3 Therefore, the subject-matter of Claim 1 meets the requirements of Art. 33 (2) PCT with respect to novelty.

1.4 The technical problem addressed by the present invention may be considered

as the requirement for reduction of the amount of data necessary for navigation and mission execution for an aircraft flying in ground proximity. This problem is solved by the applicant through construction of directional fan data sets which contain the line of sight information and therefore "hidden" points (Application, page 16, first paragraph; Fig. 2B) can be discarded, leading to a considerable data compression. D1 is not giving the skilled person any incentive for discarding hidden points. On the contrary, mathematical computations are carried out for every single DTED point within the directional fan (D1, column 2, lines 57-61). Furthermore, the documents cited in the Search Report, as well as those cited in the Application, do not provide the skilled person with any hint towards a modification of the methods exposed therein according to the disclosure of Claim 1.

- 1.5 Therefore the subject-matter of Claim 1 meets the requirements of Art. 33 (3) PCT with respect to inventive step.
- 1.6 The subject-matter of independent Claim 21 refers to a system with means for executing the method steps of Claim 1. Along the same line of reasoning as above (1.2-1.5) it is concluded that Claim 21 also meets the requirements of Articles 33 (2) and 33(3) PCT with respect to novelty and inventive step.
- 1.7 Claims 2 to 20 and 22 to 40 are dependent on Claims 1 and 21 respectively, and as such also meet the requirements of the PCT with respect to novelty and inventive step.
- 2.1 Contrary to the requirements of Rule 5.1 (a)(ii) PCT, the relevant background art disclosed in the document D1, is not mentioned in the description, nor is this document identified therein.

2.2 Independent Claims 1 and 21, are not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art (document D1) being placed in the preamble (Rule 6.3(b)(i) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).

In the present case, the following features are known in combination from the document D1 and belong in the preamble of such a claim:

- a) providing Digital Terrain Elevation Data (DTED);
- b) defining an approach azimuth ;
- c) defining directional fans by determining a fan opening angle, a fan azimuth, and a maximal range for terrain analysis;
- d) interrogating said data by one or more queries to obtain terrain information for given approach conditions.